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Vaccine Usage in U.S. Feedlots¹

Feedlots receive cattle from many sources, and these cattle can become exposed to pathogens not previously encountered when commingled at the feedlot. In some cases, these cattle travel over long distances and through various marketing channels en route to the feedlot, which can increase the risk of infection. In order to optimize the health and subsequent productivity of cattle in the feedlot, operators use various management strategies to help cattle adapt to their new environments and to stimulate effective immune responses to common pathogens. The use of vaccines is one means of enhancing cattle immunity in feedlots.

The U.S. Department of Agriculture's National Animal Health Monitoring System (NAHMS) conducted the Feedlot 2011 study, an in-depth look at large feedlots (capacity of 1,000 or more head) in 12 States,² and small feedlots (capacity of fewer than 1,000 head) in 13 States.³ As part of the NAHMS Feedlot 2011 study, data were collected on vaccine use for cattle in U.S. feedlots.

This information sheet describes vaccination practices for cattle on large feedlots, which were divided into two groups: those with a capacity of 1,000 to 7,999 head and those with a capacity of 8,000 or more head. These feedlots accounted for 82.1 percent of the January 1, 2011, inventory in all U.S. feedlots, but only 2.8 percent of all feedlots.

Percentage of feedlots vaccinating

More than 90 percent of feedlots vaccinated at least some cattle for bovine viral diarrhea (BVD) virus or infectious bovine rhinotracheitis (IBR) [table 1]. Other vaccines commonly used included those for bovine respiratory syncytial virus (BRSV) [89.5 percent of feedlots], parainfluenza 3 (PI3) [85.1 percent], clostridial diseases (84.4 percent), *Histophilus somni* (69.7 percent), and *Pasteurella*⁴ (63.8 percent).

Table 1. Percentage of feedlots that gave cattle placed on feed the following vaccines, and percentage of cattle that received the vaccines

Vaccine	Percent feedlots	Percent cattle
BVD	96.6	95.1
IBR (red nose) injectable	93.7	93.2
IBR, intranasal	52.1	13.4
PI3	85.1	55.1
BRSV	89.5	61.4
<i>Histophilus somni</i>	69.7	27.8
<i>Pasteurella</i> *	63.8	28.6
<i>Leptospira</i> spp. (lepto)	21.8	12.3
<i>Salmonella</i> (e.g., <i>Salmonella</i> Newport SRP®)	6.5	5.2
<i>Mycoplasma bovis</i>	21.8	6.1
Autogenous vaccine	5.4	3.8
<i>E. coli</i> (e.g., EpiTopix SRP or Econiche)	2.4	0.1
Clostridial	84.4	62.4
Other vaccine	5.8	1.1

*Includes *Pasteurella multocida* and *Mannheimia hemolytica*.

With the exception of those used to prevent clostridial diseases, all of the vaccines used in the majority of feedlots were directed at pathogens associated with respiratory disease in feedlot cattle. This finding was expected, since the majority of morbidity and mortality associated with feedlot cattle are due to respiratory diseases. Approximately one of five feedlots used vaccines directed at *Leptospira* or *Mycoplasma* for any cattle placed. Very few feedlots (less than 10 percent) used vaccines against potential food safety pathogens, including *Salmonella* (6.5 percent) and *E. coli* (2.4 percent).

¹ Feedlots with a capacity of 1,000 or more head.

² Arizona, California, Colorado, Idaho, Iowa, Kansas, Nebraska, New Mexico, Oklahoma, South Dakota, Texas, Washington.

³ Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, Ohio, Pennsylvania, South Dakota, Texas, Wisconsin.

⁴ Includes *Pasteurella multocida* and *Mannheimia hemolytica*.

Percentage of cattle vaccinated

More than 90 percent of cattle placed in feedlots received vaccines for BVD and IBR viruses (table 1). A majority of cattle placed in feedlots were vaccinated for clostridial disease (62.4 percent), BRSV (61.4 percent), and PI3 (55.1 percent). There were few differences by feedlot capacity or region in the percentages of cattle vaccinated for various disease agents (table 2). The use of a vaccine containing PI3 was more common for cattle placed in feedlots with a capacity of 1,000 to 7,999 head (81.3 percent) than in feedlots with capacity of 8,000 or more head (51.7 percent). Likewise, the use of vaccines containing BRSV and *Histophilus somni* was more common in feedlots with capacity of 1,000 to 7,999 head than feedlots with a capacity of 8,000 or more head.

Table 2. Percentage of feedlots that gave cattle placed on feed the following vaccines, and percentage of cattle that received the vaccines, by feedlot capacity

Vaccine	Percent feedlots		Percent cattle	
	Feedlot capacity			
	1,000–7,999 head	8,000 or more head	1,000–7,999 head	8,000 or more head
PI3	87.6	79.2	81.3	51.7
BRSV	87.8	93.5	88.6	57.9
<i>Histophilus somni</i>	74.0	59.3	55.0	24.3
<i>Pasteurella</i> *	66.1	58.2	42.7	26.8

*Includes *Pasteurella multocida* and *Mannheimia hemolytica*.

Comparison of feedlots vaccinating and cattle vaccinated

Comparing the frequency of vaccine use by feedlots and the percentage of cattle vaccinated can give some indication as to the patterns of vaccine use.

Discrepancies in the frequency of vaccine use at the feedlot and cattle levels can arise from differential use by feedlot capacity or by selective use within feedlots. Since there were no differences by feedlot capacity in the percentage of feedlots that vaccinated at least some cattle for various disease agents, it appears that there was differential use of the vaccines within feedlots. Selective use of various vaccines may be based on the type of cattle (age, breed) or on the source of the cattle. Cattle from some regions or cattle transiting different marketing channels may be handled differently with regard to vaccination protocols. For example, the percentage of cattle vaccinated and the percentage of feedlots using the vaccine are substantially different (30 percent or more) for intranasal IBR, PI3, *Histophilus somni*, and *Pasteurella*.

Summary

Virtually all feedlots vaccinate some cattle for two key respiratory pathogens, BVD and IBR viruses, leading to nearly all cattle placed in feedlots being vaccinated for these two disease agents. There appears to be less industry-wide agreement on the need or the effectiveness of the other vaccine products available for use in feedlot cattle. Very few feedlots (5.4 percent) used an autogenous vaccine for any animals placed, and overall only 3.8 percent of cattle placed in feedlots received such a vaccine.

Vaccination is an important tool for disease control in cattle feedlots, but is not the only tool available to producers to prevent disease and losses due to animal morbidity and mortality. Other tools include exposure management through cattle-handling protocols, enhancement of immune system function through cattle handling and nutrition, and the use of antimicrobial products.

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